



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,601	11/01/2001	Ulrike Rohr	2000DE135	8200

25255 7590 03/28/2003

CLARIANT CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
4000 MONROE ROAD
CHARLOTTE, NC 28205

EXAMINER

RODEE, CHRISTOPHER D

ART UNIT

PAPER NUMBER

1756

8

DATE MAILED: 03/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/004,601	ROHR ET AL.
	Examiner Christopher D RoDee	Art Unit 1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 27 February 2003.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-17 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-17 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____ .

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ .
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> .	6) <input type="checkbox"/> Other: _____ .

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of electrophotographic toners and developers as the elected species in Paper No. 7 is acknowledged. In the election, the toner is further defined as a dry toner and the pigment is an azo pigment. Applicants state that claim 4 is withdrawn from consideration because it is limited to the non-elected polycyclic pigments. Claim 4 includes an azomethine polycyclic pigment, which appears to be an azo pigments. Claim 4 has therefore been considered for only the azomethine polycyclic pigments.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification as originally filed does not describe the invention as currently claimed. The claimed method states that the wax-coated pigment granules are added to the compound (see § 112, second paragraph, rejection below), which is an electrophotographic toner and developer based on the election. The specification does not disclose adding the wax-coated pigment granules to an electrophotographic toner or developer. An electrophotographic toner is a particulate mixture of a colorant in a binder resin (Diamond,

pp. 163-170) while electrophotographic developers are either the toner alone (single-component developer) or a mixture of the toner and carrier particles (two-component developer) (Diamond, pp. 162, 163). Thus the claimed process discloses adding the wax-coated pigment granule to the particles having binder resin and colorant. The specification discloses adding the pigment granules to a toner binder resin (¶ [0079]), Example 4) followed by grinding and classification to form the toner. Further, the specification process steps specifically require additional steps of grinding and classification to form the toner. Example 4 of the specification states that toner of the invention has a size of from 4 to 25 µm (¶ [0103]). The wax-coated pigment, which has a size of from 50 to 5000 µm, must be ground in order for a toner of such a smaller size to be obtained. There is no disclosure in the specification as filed of adding the wax-coated pigment to the toner.

Claim 17 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 17 does not have basis in the specification as filed because the specification only discloses the pigment granules as wax-coated, not just coated (¶¶ [0004], [0005] & Examples). The instant claim includes coating of other materials such as a non-wax resin, a metallic alloy, an oxide, etc. These other coatings for the pigment are not disclosed or taught by the specification. As such, the claim includes new matter.

Claim 17 has been considered as disclosing a mixture of a binder resin for an electrophotographic toner or developer and the wax-coated pigment particles. That is, the claim presents the intermediate product of Example 4 (¶ [0102]) before the mixture was ground and classified.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-16 are indefinite because the elected species of electrophotographic toners and electrophotographic developers are not “compounds” as referenced in the claim. A “compound” giving the term its usual and customary meaning is “a substance whose molecules consist of unlike elements and whose constituents cannot be separated by physical means. A c[ompound] differs from a physical mixture by reason of the definite proportions of its constituent elements which dependent on their atomic weights, by the disappearance of the properties of the constituent elements, and by the entirely new properties characteristic of the c[ompound] formed.” See *Chemical Dictionary*, p. 148. An electrophotographic toner is a mixture of a colorant in a binder resin (Diamond, pp. 163-170) while electrophotographic developers are either the toner alone (single-component developer) or a mixture of the toner and carrier particles (two-component developer) (Diamond, pp. 162, 163). Again, these terms are given their usual and customary meaning. It is apparent that electrophotographic toners and electrophotographic developers are not “compounds” because they are physical mixtures of components. The claims are thus indefinite because the toner and developer do not properly define a compound giving the terms their usual and customary meaning.

Claim 17 is similarly indefinite because the colored compound is stated as containing the coated pigment granules and a binder for electrophotographic toners or electrophotographic

Art Unit: 1756 -

developers. This is also a physical mixture of components, not a compound giving the terms their usual and customary meaning. The claim is therefore indefinite because it defines a compound by a mixture of components.

While applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See *In re Hill*, 73 USPQ 482 (CCPA 1947).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pollard in US Patent 4,173,492 in view of *Handbook of Imaging Materials* to Diamond, pp. 162-171.

Pollard discloses a composition having a wax-coated pigment dispersed in a polymeric resin (Abstract). In making the composition, a color pigment is mixed with a wax so that the wax coats the pigment particles and encapsulates the wax therein (col. 2, l. 60 - col. 3, l. 11; col. 6, l. 13-20, l. 54-57; col. 9, l. 29-39) in the shape of a flake or a chip. Each of these shapes would appear to meet the requirements of a "granule" giving the term its usual and customary meaning as being a "grain" or "particle". Pollard states beginning in column 6, line 67,

"[the] composition has a high dispersion of pigment throughout the plastic resin, thus the wax prevents aggregation of the pigment particles which is one cause of streaking and poor coloring of plastic resin using previously known colorants. The

pigmented plastic resin or rubber composition is produced by mixing the colorant produced in accordance with the method described above with the normal plastic resin or rubber to produce a brilliant colored end composition which is made possible because of the ability of the wax-coated pigment to be wetted by the plastic resin or rubber during mixing with the new colorant."

The reference later in column 7 states that the pigment has a mean particle size of from about 0.1 to 100 μm , preferably 0.2 to 50 μm . The most preferred particle size for inorganic pigments is 50 μm (col. 7, l. 37-50).

The resin that is pigmented by the wax-coated pigment is a thermoplastic material (col. 8, l. 35+), such as acrylic resins, such as PMMA or styrene-methacrylate resins, polyethylene resins, or ethylene-vinyl acetate copolymers. These resins are disclosed by Diamond as being conventionally used as a toner binder resin (see p. 165 and Table 4.1).

Example 1 of the reference prepares a wax-coated pigment having 33 % by weight wax and 67 % by weight pigment while Example 2 uses a 50:50 weight mixture of the wax and pigment.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to produce a wax-coated pigment with a size of at least 50 μm because the reference states that the pigment itself preferably has a size of 50 μm and once the pigment is coated and encapsulated with wax the size of the coated wax would be larger than the size of the pigment by itself. The artisan would have been expected to optimize the size of the wax to produce the high-concentration and excellent dispersion of wax in the polymer resin as taught by Pollard (see col. 5, l. 47-50, 64-65). The artisan would have been expected to optimize the amount of coating wax noting the exemplified amounts presented in the reference Examples.

As discussed above, claim 17 has been considered as disclosing a mixture of a binder resin for an electrophotographic toner or developer and the wax-coated pigment particles. That

is, the claim presents the intermediate product of Example 4 (¶ [0102]) before the mixture was ground and classified.

Claims 1-3, 5-10, and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Handbook of Imaging Materials* to Diamond, pp. 162-171 & 193-197 in view of Pollard in US Patent 4,173,492.

Diamond discloses the conventional process of producing a toner. Diamond states that pigment and additive dispersion in the binder resin can strongly influence the quality of the resultant toner images (p. 193, § 4.6.1). The process includes melt mixing pigment and internal additives with the base toner polymer, breaking the pigmented polymer into particles of approximately the desired size, removing unwanted sizes, and blending external additives (p. 193). Specific melt mixing process features are discussed on p. 194, § 4.6.2. The aim of melt mixing is to obtain dispersions closely approximately perfectly distributed ingredients (p. 194). Premixing of the ingredients before melt mixing is possible. Once the particles are melt mixed they are extruded to as pellets to a size of about 100 µm (p. 195, § 4.6.3), followed by attrition and classification to obtain the desired toner particle size. Diamond, as discussed above, discloses that binder resins are chosen so that they melt upon heating. This would suggest a thermoplastic resin to the artisan because thermoplastic resins soften and melt upon heating. Specific examples of the binder resin are disclosed by Diamond. Diamond also discusses typical adjuvants for the toner including charge control agents (p. 149, § 4.2.3), such as ammonium compounds, and pigment colorants (p. 194, § 4.2.2), such as azo pigments (p. 169, top). Typical colorant loadings are 5 to 15 % by weight.

The reference does not disclose the specific wax-coated pigments of the instant claims.

Pollard discloses wax-coated pigments as discussed above. The wax-coated pigments have improved dispersion in a thermoplastic binder resin. The exemplified hydroxystearate wax appears to meet the requirements of a synthetic wax because it can be formed by synthetic preparation from naturally occurring hydroxystearate (col. 7, l. 14+). If applicants disagree with this position they are asked to clarify in the next response to this Office action. Note the dropping point (i.e., melting point) of the exemplified wax as 86 to 88 °C (col. 7, l. 22-23). Pollard also discloses methods of adding the coated pigment to the thermoplastic resin, such as by use of an extruder (col. 9, l. 45-57). When plural individual pigments are coated with wax (col. 9, l. 30-31) it appears that the limitations of a master batch are met (instant claim 14).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a wax-coated pigment as the colorant in preparation of the conventional toner as discussed by Diamond because Diamond teaches that dispersion of the colorant in the binder resin is a critical feature in toner manufacture and Pollard teaches that wax-coated pigments have improved dispersion in thermoplastic binder resins. The artisan would recognize that Diamond and Pollard are concerned with similar problems and are, therefore, related art. The artisan would use and optimize those pigment sizes as well as pigment and wax compounding amounts suggested by Pollard in order to obtain the benefits taught by Pollard for dispersing pigment into a binder resin. Claim 9 specifies that the wax-coated pigment granules are spray dried. This is seen as a product-by-process limitation in the method claim. It appears that the wax-coated pigment particles of Pollard meet the requirements of being formed by spray drying because the pigments in Pollard are encapsulated by the wax, which is the same structure as would be expected by spray drying. Claims 6 and 7 are rejected because they do not limit the wax to the specified species of wax.

Art Unit: 1756

but rather limit the synthetic waxes of Iciam 5. That is, the semisynthetic wax of claim 5 is also permitted in the scope of the wax of these dependent claims.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Handbook of Imaging Materials* to Diamond, pp. 162-171 & 193-197 in view of Pollard in US Patent 4,173,492 as applied to claims 1-3, 5-9, 12, 13, 15 and 16 above, and further in view of Macholdt *et al.* in US Patent 6,159,649.

Diamond and Pollard were described above. Diamond does not disclose the non-ammonium charge control agents of the instant claims and does not specify the amount of the charge control agent in the toner.

Macholdt teaches various charge control agents that are effective with azo pigment containing toners. These include triphenylmethanes; ammonium and iminium compounds (immonium compounds); fluorinated ammonium and iminium compounds; biscationic acid amides; polymeric ammonium compounds; diallyl-ammonium compounds; aryl sulfide derivatives; phenol derivatives; phosphonium compounds and fluorinated phosphonium compounds; calix(n)arenes; cyclically linked oligosaccharides (cyclodextrins); polyester salts; metal complex compounds, especially salicylate-metal and salicylate-nonmetal complexes and -hydroxy carboxylic acid-metal and -nonmetal complexes; benzimidazolones; azines, thiazines or oxazines, and those specified in column 7, line 61 - column 16, line 8. The amount of the toner in the charge control agent is preferably 0.1 to 5 % by weight of the toner (col. 15, l. 11-18, l. 32-41).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use one of the known charge control additives of Macholdt in the amounts suggested in the invention of Diamond because Diamond suggests that charge control

Art Unit: 1756

additives be added to the toner to adjust the rate and magnitude of charge and Macholdt discloses specific charge control agents for this purpose.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher D RoDee whose telephone number is 703 308-2465. The examiner can normally be reached on most weekdays from 6 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703 308-2464. The fax phone numbers for the

Application/Control Number: 10/004,601
Art Unit: 1756

Page 11

organization where this application or proceeding is assigned are 703 872-9310 for regular communications and 703 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.



CHRISTOPHER RODEE
PRIMARY EXAMINER

cdr
March 24, 2003